

# THE QUALITY OF ESTIMATES FROM THE AMERICAN COMMUNITY SURVEY FOR SMALL POPULATION GROUPS

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# Issues and Concerns

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- ACS Sample Size
- Interpretation of Multi –year Averages
- Reliability of ACS Estimates due to Sample Design Differences
- Are Small Samples Representative?

# Census Long Form and American Community Survey

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- American Community Survey will replace the 2010 long form
- Topics mandated or required by federal law

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# American Community Survey Design (starting 2005)

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- Annual sample of 3 million addresses
- A new panel each month
- Mail with telephone follow-up
- Personal follow-up of a one-third sample
- Use of differential sampling based on size
- Over-sampling low mail response areas

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# Data Products to Replace Long Form

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- 5 year averages starting 2010
  - replace census summary files
  - typical standard errors are larger than corresponding long form standard errors
  - updated each year

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# Other Data Products

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- Annual averages published for areas of 65,000+ population
- 3 year averages for 20,000+
- Annual averages for smaller areas released for “research purposes”
- Public Use Files (PUMS)

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# American Community Survey and the Inter-Censal Estimates

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- ACS is a continuous source of information for updating the Population Estimates
- Will provide some information on county-to county migration
- Improvements will be achieved for all major race and ethnic groups listed on the census short form

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# Weighting and Population Controls

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- American Community Survey can provide more race and detail than the intercensal population estimates
- American Community Survey will improve the quality of demographic estimates

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# Issues About Sample Size

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- Small Area or Small Population Group
  - 400 People
  - Group of People with a Specific Characteristic
  - People who use a Language Other than English at Home
  - Relatively High Standard Error

# Question 1

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## What is the Impact of Having a Smaller ACS Sample?

- Larger Standard Errors
- Larger Confidence Intervals
- Data may be too noisy for some uses but adequate for other purposes.

# Effect on Margin of Error

**What is the Impact of Having a Smaller ACS Sample?**

**90 Percent Confidence Interval**

**2010 Census Long Form**

**280-520**

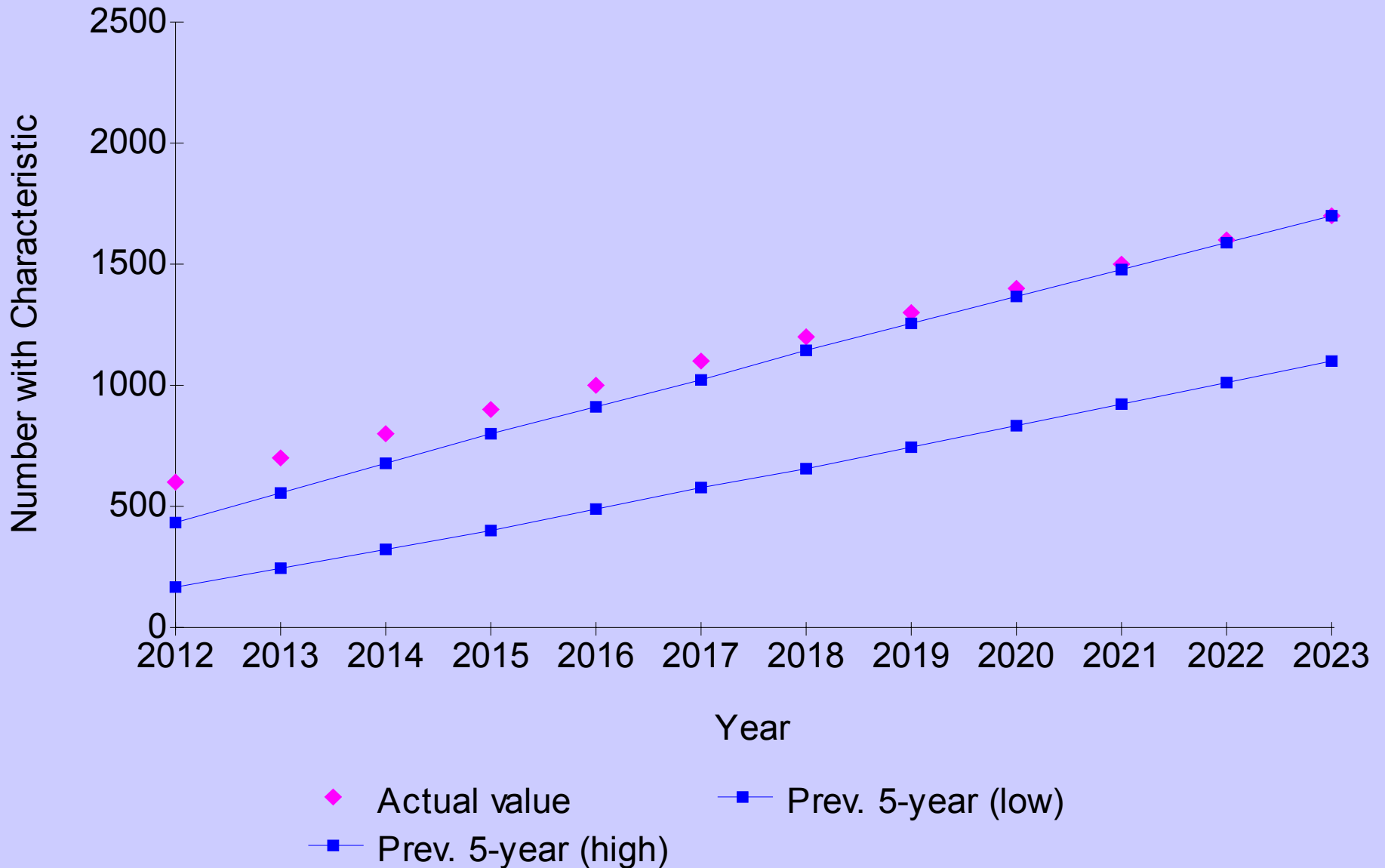
**ACS (2008-12)**

**240- 560**

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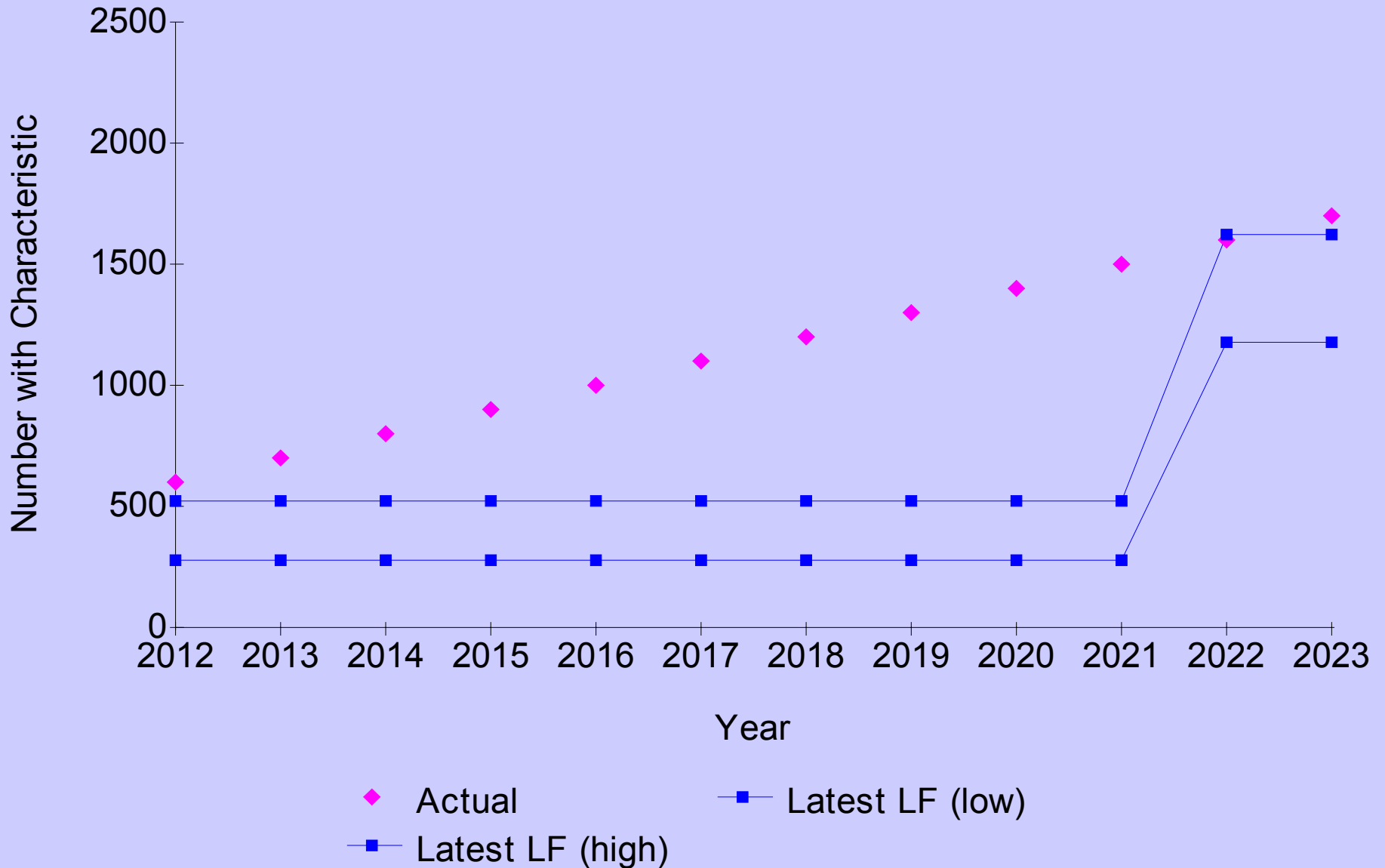
# ACS 5-year Average (Figure 1)

Population with Strong Trend



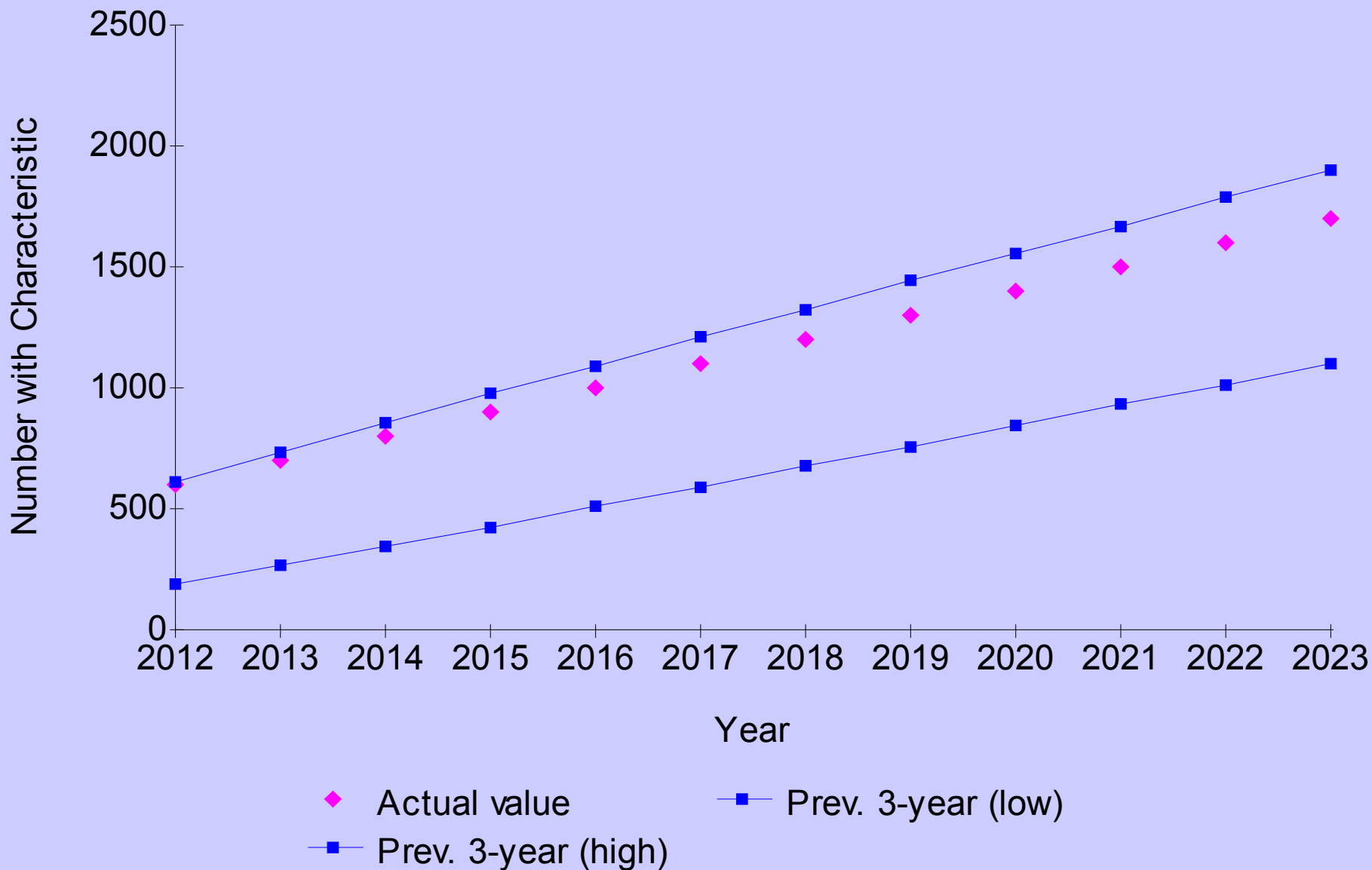
# Decennial Long Form (Figure 2)

Population with Strong Trend



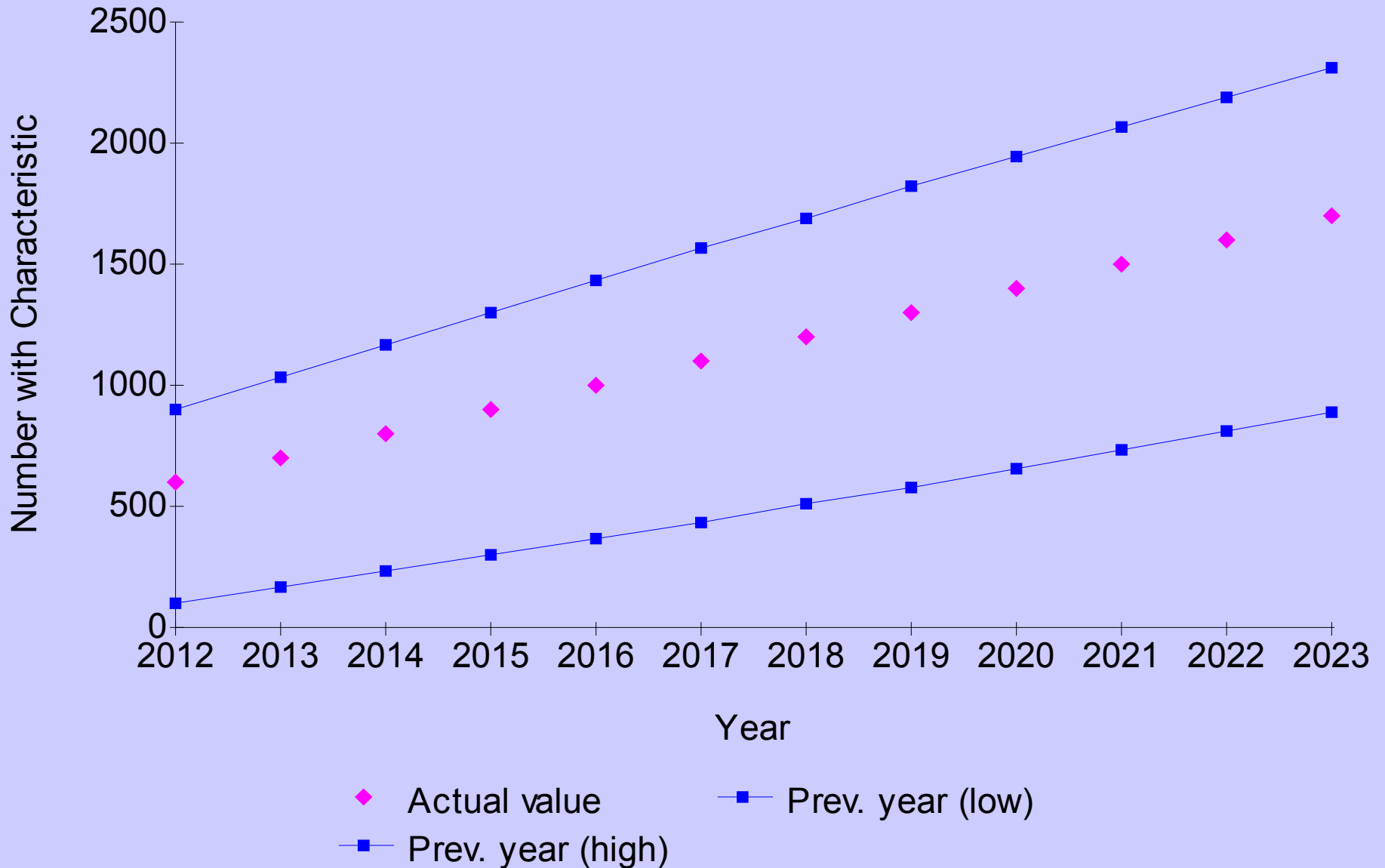
# ACS 3-year average (Figure 3)

Population with strong trend



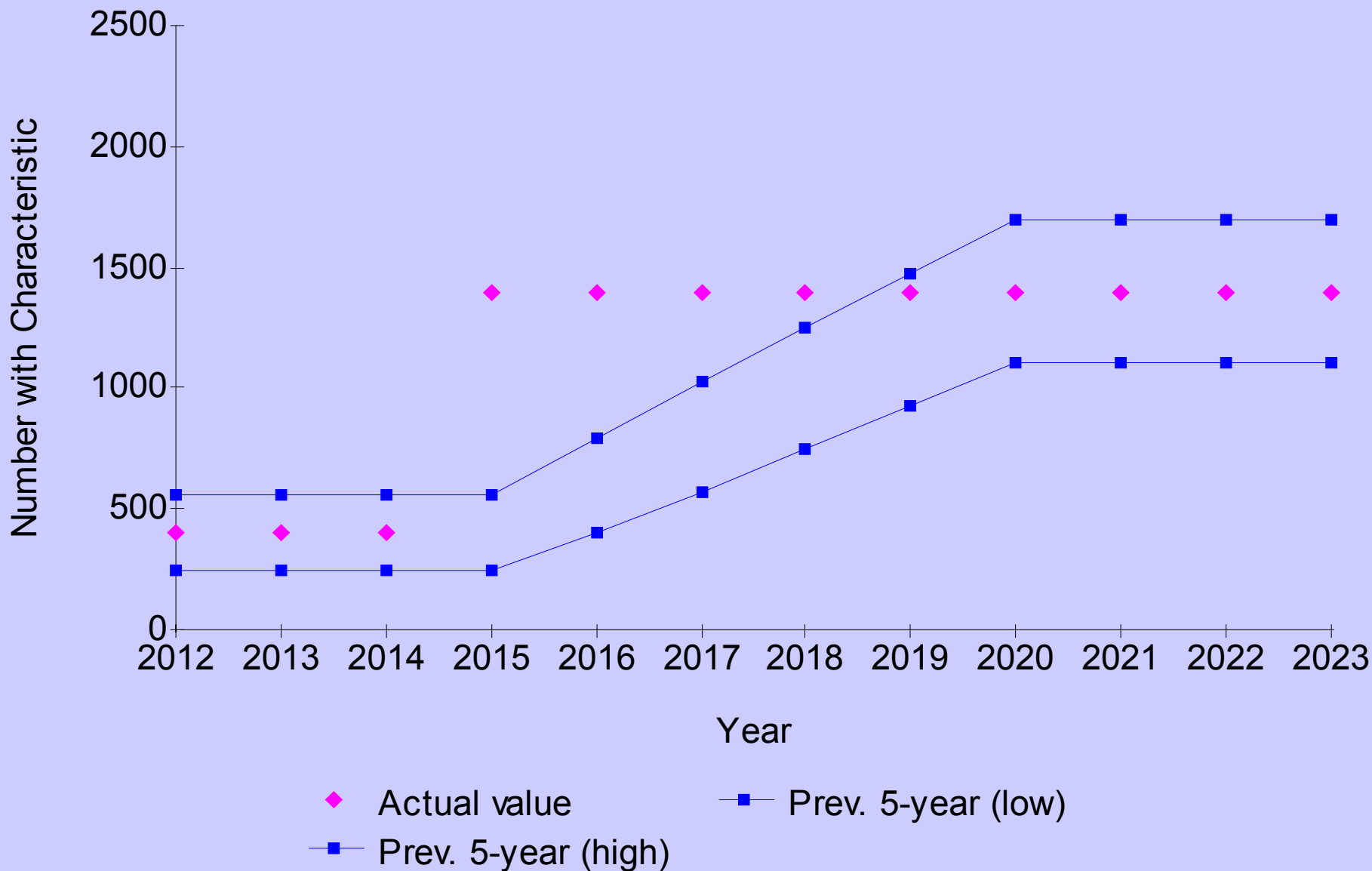
# ACS 1-year Average (Figure 4)

Population with strong trend



# ACS 5-year Average (Figure 5)

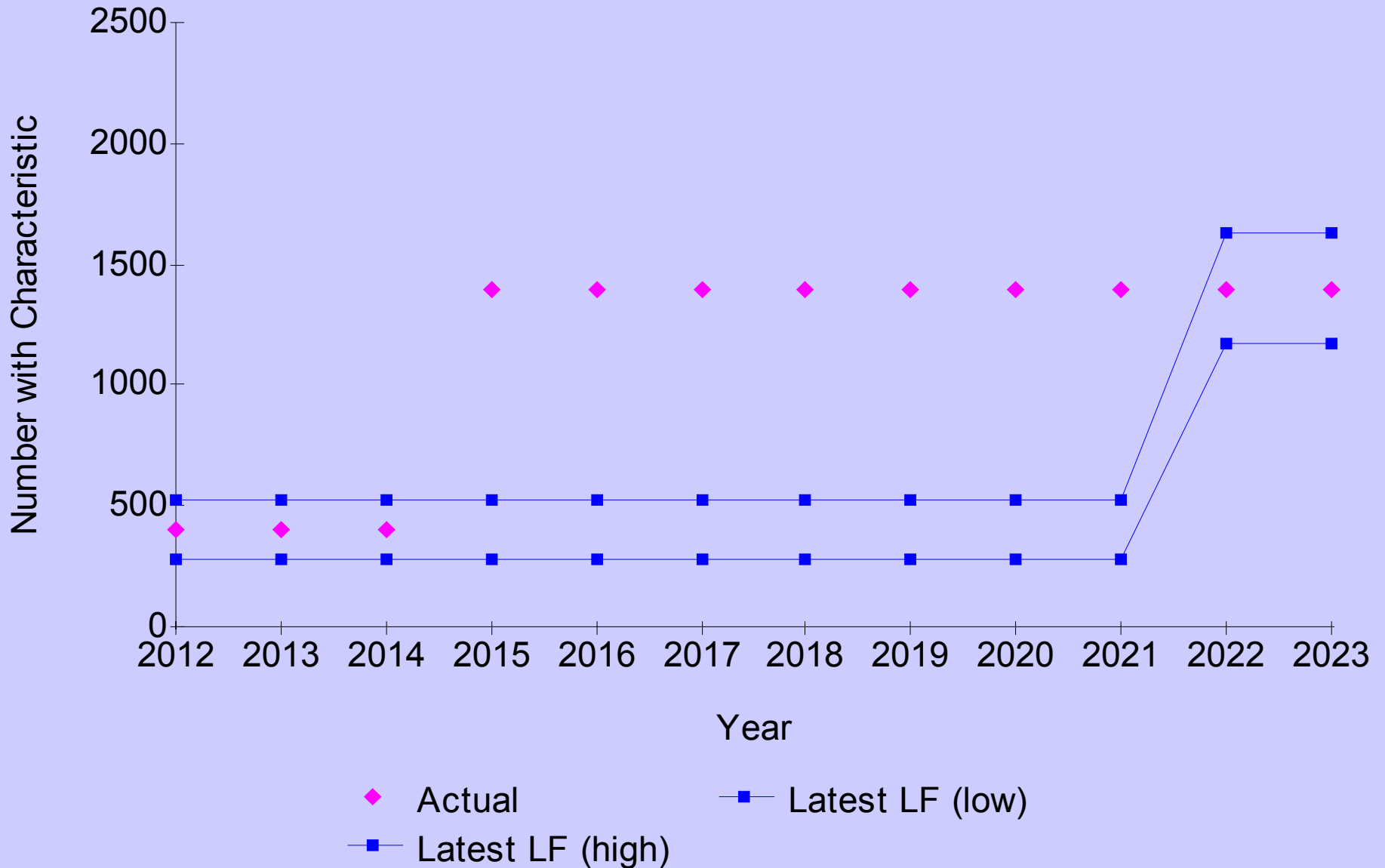
Population with Sudden Jump





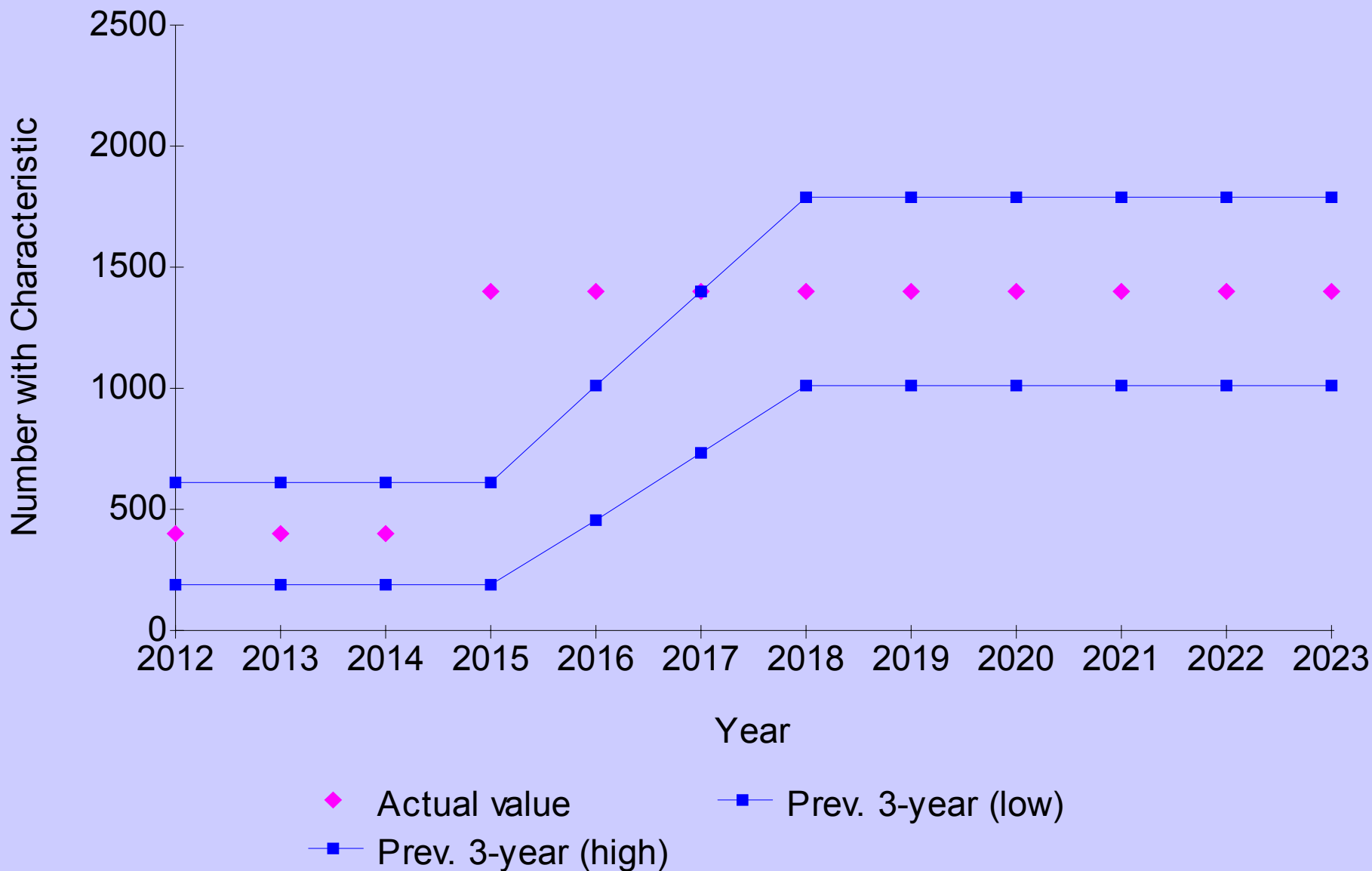
# Decennial Long Form (Figure 6)

Population with Sudden Jump



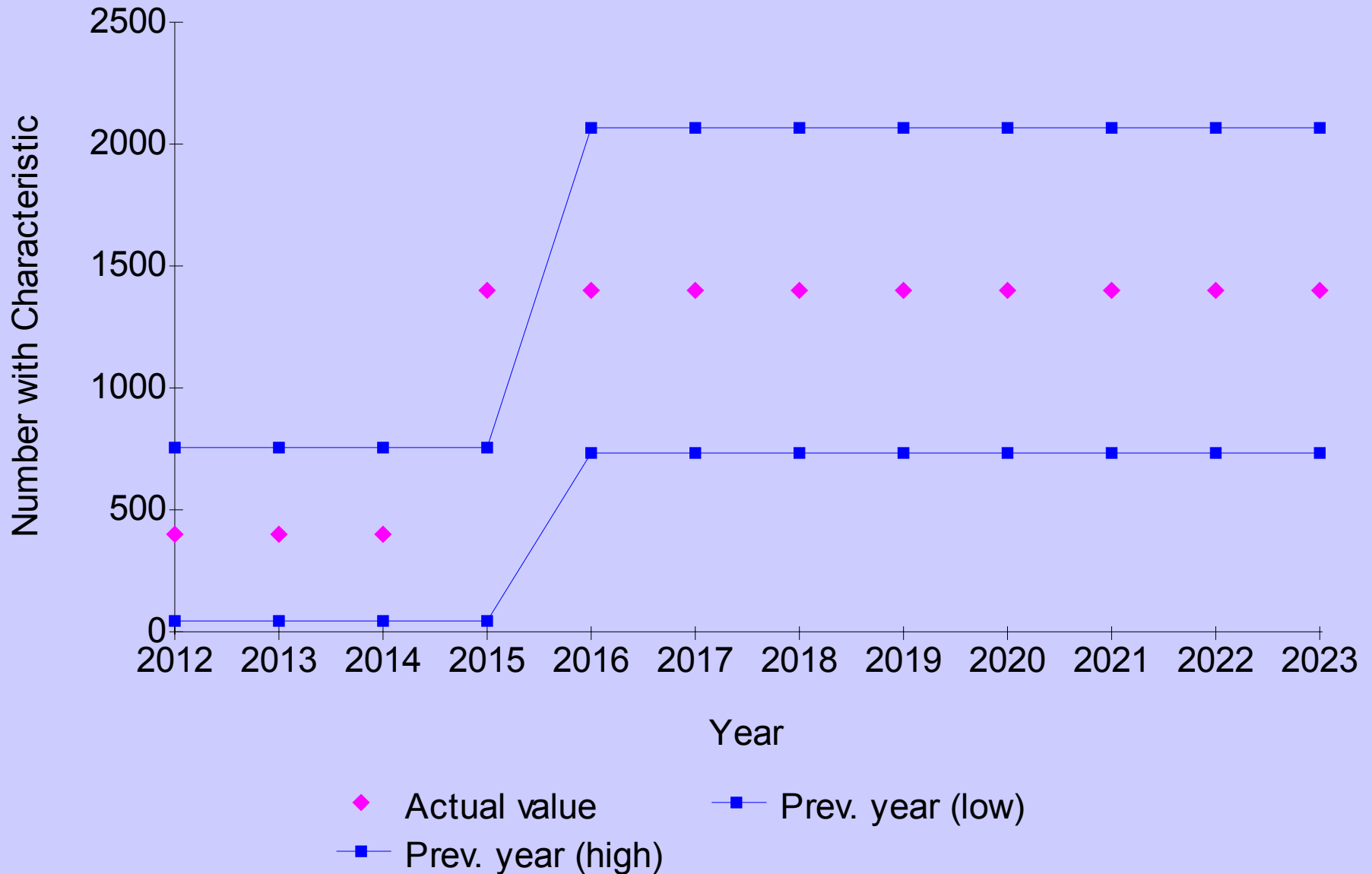
# ACS 3-year average (Figure 7)

Population with sudden jump



# ACS 1-year Average (Figure 8)

Population with sudden jump



# Issues About Multiple Year Data

- “Decennial snapshot” versus moving average
- Basic argument
  - no issue, if no change over time
  - decennial snapshot is weakest when there is change over time
- Single-year data needed to supplement 5 year averages
- Are there applications where a decennial snapshot is better?

# A STEADY TREND

Year(y)	1	2	3	4	5	6	7	8	9	10	11	12
Actual Size	400	420	440	460	480	500	520	540	560	580	600	620
5 year Average	---	---	---	---	---	440	460	480	500	520	540	560
Previous Census	---	---	---	---	---	---	480	480	480	480	480	480

## Question #3

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- What is the impact of the 1-in-3 sub-sampling of non-respondents in low mail response areas? Does it affect reliability?
- ACS sampling error will be larger than that of the long form
- Overall ACS quality will be comparable to that of the long form

## Question #4

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- How can a small monthly sample be representative?
- Estimates based on data collected over 60 months are reasonably stable
- The laws of probability provide the basis to calculate the margin of error due to the sampling mechanism

# ACS Operational Improvements

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- Use of higher sampling rates in small governmental units
- Implement an over-sampling plan in areas with low mail response
- Language program

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